V I S C E R O P T O S I S.

PRESENT-DAY THEORIES OF ITS CAUSE AND TREATMENT.

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THE literature that has arisen around this subject is so vast that it would appear almost impossible to follow the trend of thought regarding the condition. Theories advanced years ago still find their supporters in current medical literature, in spite of the fact that sufficient evidence has been adduced to prove that they are inadequate.

The influence of anatomical and pathological teaching has had its effect on investigators and writers on this subject, when they attempt to co-relate symptoms with morbid anatomy. It might appear as hopeless to reconcile the teaching of some physicians who maintain that no operation should be performed on a visceroptotic patient, with that of surgeons who occasionally operate, as to reconcile the practice of some surgeons who hold that the cure for excessive mobility of the alimentary canal is "more mobility" with that of others who carefully perform intricate operations with the object of fixing the wondering intestine in its original and proper position.

This great difference in treatment, as knowledge of the condition becomes more exact, ought to diminish. A greater appreciation of the cause of the complaint or the stage

it has reached should inevitably reduce the number of these cases where differences still exist.

A study of the subject seems to show how the tendency to approach it has altered. The belief in "constitutions" of the older physicians gave place to theories based on observations of fact. Here it was that the student of anatomy, physiology, bio-chemistry and pathology had his day. The scientific physician sought for an organic origin for the maladies with which he dealt. Now, however, the tendency is to revert to an attempt to find some explanation for the conditions in the patient's distinctive personality.

In dealing with this subject, I shall attempt to give a brief historical survey of some of the theories held before the close of the last century. I will then review some of the recent findings in anthropology, anatomy, embryology, physiology, bio-chemistry, neurology and psychiatry, in so far as they have a bearing on the matter in hand. I will endeavour to give an account of the aetiology, the incidence, with respect to age, sex, and other conditions, and enumerate the main symptoms and associated signs and complications. A statement of present day theories will lead up to the question of diagnosis, treatment, and the results thereof, and a general discussion of the condition should enable one to come to some conclusions regarding the theories now held.

Historical Survey.

Physicians in early times regarded any departure from the usual position of the abdominal viscera as pathological, and

the literature, from time to time, reports prolapsed liver, kidney, spleen, stomach and bowel. Congenital conditions, the drag produced by the weight of the bowel contents, or a general weakness of the tissues, were offered as reasons for these anomalies.

Engel[42] and Frerichs,[43] about the year 1860, suggested that tight lacing caused deformities which resulted in the displacement of the liver and the large bowel. A few years later Rollet[112] published a paper on nephroptosis, and soon the prolapsed kidney was held responsible for the condition of hysteria.

Glénard[46] in 1885, following communications by men in various countries on unusual positions of the abdominal viscera communicated the first of his many monographs on enteroptosis. His writings and theories aroused much interest in, and discussion of, this condition. He assumed that, for health, there must be equilibrium in the abdomen, attributing to the colon the most important part in the resulting enteroptosis which was produced by its contents lessening the angle at the flexures and producing stasis and drag. The hepatic flexure gave under this increased pull, taking with it the pyloric end of the stomach and so causing dilatation of that organ. Further, the transverse colon was pulled down and more stasis resulted, and the support of the solid viscera being lost they also prolapsed.

He elaborated a less mechanical theory, in which he

assumed that, derangement of the liver, which might be hereditary or acquired, produced less gas in the intestines, and so contraction of the bowel, obstruction and ptosis. Some toxaemia, infection emotion or injury might cause the liver to revert from its normal function, and so initiate this sequence of events.

The minuteness of Glénards clinical observations, although they were not supported by pathological findings, drew attention to his work, so that the condition of visceroptosis is commonly referred to to-day as, Glénards disease.

English writers, in 1896, explained this condition by assuming that there was a congenital weakness of the abdominal wall and mesenteries. Stiller, in Germany, maintained that the congenital weakness was psychical, as well as physical, and found a floating 10th rib in all his cases.

Mathieu[81] and Roux, found that the symptoms of enteroptosis might be got in patients, who had a well developed abdominal wall, and who showed none of the changes in the abdomen on which Glénard placed so much reliance.

The "Corset" Theory was revived later, but Fuchs[44] showed that prolapsed viscera could be found in young women who had never worn corsets.

Disturbance of the innervation of the abdominal wall was brought forward as a reason for visceral dislocations, on the assumption that it was responsible for regulating the intra-abdominal pressure, though, in 1888, it had been proved by Weisker,[118] that the intra-abdominal pressure was negative.

Keith in 1903 produced the theory that faulty inspiration brought about Glénard's disease. The interaction between the diaphragm and the abdominal muscles, pushes the upper viscera down and forwards in inspiration and up and backwards in expiration. Alteration of the balance of this mechanism, produced perhaps by indiscretions or faults in diet will displace the organs in the upper part of the abdomen. These in turn push or pull the hollow viscera out of their proper places. In explaining[73] the mechanism by which man has overcome the change from the horizontal to the vertical position, he states that the stimulus produced by the drag of the viscera on Paccinian-like Corpuscles, at the root of the mesenteries, results in a reflex, which makes the transversalis muscle contract, and so support the abdominal viscera.

It will be noted that lack of balance physical or mental is an explanation common to all these theories, with the exception of the purely mechanical corset one.

The introduction of Röntgen, or X-rays and the use of the opaque meal in 1898, allowed of more extensive and accurate observations on the alimentary tract, and led to further conflicting theories as to the nature of visceroptosis. Many, apparently healthy stomachs, showed a greater curvature below the umbilicus, a condition which when found previously by inflation and percussion was supposed to indicate that gastroptosis was present. Some of these low placed stomachs were found in otherwise normal individuals and could not be accused of giving rise to any abnormal symptoms.

The shape of the stomach varied from the fish hook variety, which is the more common, to the cow horn which is broadest at the fundus, and narrows towards the pylorus, the lowest part. Various varieties of stomachs came to be recognised - the orthotonic, hypertomic, hypotonic and atonic. These various types might be found in relationship to a pathological condition, such as, gastric or duodenal ulcer, hyper-chlorhydria or hypo-chlorhydria, but occasionally no such pathological explanation for their occurrence was available. Other parts of the alimentary canal, such as the 3rd part of the duodenum, the caecum, the ascending, transverse and descending colon, were found to be much lower in position than in the average person. Either or both kidneys, and occasionally the liver, were found to occupy a lower position than was anatomically correct. For these reasons anatomists had to revise their concepts of what was normal.

No doubt Glenard, when he wrote his various contributions to the subject of entroptosis, did not foresee that this condition would become a surgical disease. He stated that in his opinion, no treatment had ever been devised that had been of much benefit, and that patients, with visceroptosis, were destined to a life of more or less invalidism.

The surgeons, however, thought and still continue to think, that by their aid, conditions in the abdomen might be made more normal, and distressing symptoms by their help relieved. They had the opportunity of observing the effect of the opaque meal, and of observing the viscera during laparotomy.

Foremost among them comes Lane, who, since 1885[76] has interested himself, and numerous others in this condition. He observed various bands, which appeared to interfere with the action of the bowel. He considered the alimentary tract as a drainage system, in which the flow is regulated and prevented from ebbing backwards, by sphincters. These are situated at the lower end of the oesophagus, at the pylorus, and at the junction of the pelvic colon with the rectum. Less important are those in the 2nd part of the duodenum, the lower end of the ileum and in the transverse colon.

The unnatural diet of civilised man prevents the rectum from being stimulated to empty itself more than once a day. Thus the pelvic colon becomes overloaded and, on account of man's upright posture, it drops, and forms a kink at the junction of the pelvic and iliac segments. This kink delays the contents of the colon proximal to it, and also the contents of the ileum and stomach, and results in one of two things happening.

Those whose vitality is low, cannot overcome this stasis and so the unnatural bulk and weight of the intestinal contents overcomes the sphincter, and the intestines dilate, lengthen and become torturous. The weight of this badly functioning bowel, drags on the fixed duodeno-jejunal junctions, causes constriction and obstruction and so leads to distention of the first part of the duodenum. This produces spasm of the pylorus, gastric stasis and so dilatation and dropping of the stomach. Secondarily, the mucous membrane of the intestine, becomes damaged and

allows poisonous products from putrefactive organisms in the retarded bowel contents to be absorbed. These poisons act on the overstrained bowel muscles, causing further delay and greater absorption, and constituting the worst of vicious circles. These people become sufferers from general visceroptosis.

In individuals of greater resistance, bands and membranes are formed, "by crystallisation of the lines of force" in the mesentery in an attempt to support the overloaded intestines. These bands, however, contract and, pressing on the bowel, cause localised obstruction and symptoms which are quite different from those in persons of the first group.

In America, Goldthwait and others, developed quite a different theory for visceroptosis. He maintained that the ewe-necked, narrow chested individual, was the person in whom this condition developed. Poor expansion of the narrow thorax led to deficient aeration, and backward pressure in the lungs, which resulted in low blood pressure and poorly oxygenated blood. To compensate for this, the right heart hypertrophies causing the pulmonary vessals to dilate and press on the lymphatics. The accompanying narrowness of the upper abdomen prevents the abdominal viscera occupying their normal positions and, as the pylorus is situated above the lowest part of the stomach, gastric stasis results. The intestines are loosely attached, shorter than normal and easily kinked. Nor do they assimilate food readily, The kinking of the intestines causes a drag on the solar plexus, and this produces the nervous symptoms, which are added to those

of auto-intoxication produced by the stasis. Faulty habitus, which interferes with the normal position of the upper abdominal organs under the dome of the diaphragm, and with the supporting shelf for the kidneys and small intestines formed by the upward and backward slope of the axis of the abdominal cavity, and the narrowing of the antero-posterior measurement of the abdominal cavity, at the level of the last lumbar vertebra, allows the viscera to slip forwards and downwards into the lower abdomen.

In 1904, mobility of the Caecum was suggested by Haussman[55] as the cause of right iliac pain and constipation.

In 1909, Jackson[70] published an account of a thin membrane which passed from the right parietal wall to invest the caecum and the ascending colon. This he found in patients who complained of pain in the right iliac fossa constipation, colitis and the symptoms of neurasthenia, and to it were attributed these vague abdominal symptoms.

The attention directed to the appendix since the beginning of this century led radiologists and surgeons to the conclusion that there was such a pathological entity as chronic appendicitis, characterised by attacks of pain in the right iliac fossa constipation or diarrhoea, vague gastric symptoms, and signs of general toxaemia, and in 1916 Moynihan[93] gave the name "appendix dyspepsia" to this type of case.

Disease in relation to habitus.

The relation of disease to the physical conformation of the patient has been investigated by many authorities

and the use of the Röntgen rays in studying the skeleton, body cavities, viscera, and the relationships of various organs, has revealed many deviations from what was previously considered normal anatomically.

Mills in 1917[88] following the work of others, who had noted the apparent relationship between the body build of an individual and the position, tone and mobility of the stomach and intestines, differentiated various groups or types. He discribes as dominant types:

1. the Hypersthenic group, characterised by a large body, short thorax, long abdomen with a relatively small pelvis well padded with fat, and the

2. Asthenic group characterised by frailty of build, long narrow shallow thorax, with a short thin abdomen and relatively wide and capacious pelvis.

To these two groups he added the (a) Sthenic, (b) Hyposthenic subdivisions.

The stomach in the hypersthenic and sthenic person is found to be cow horn in shape, lies up under the ribs, and the tone and motility is good. All the organs of the abdomen are placed high, and the colon contains little residue after 24 hours. In the hyposthenic and asthenic types the stomach is J-shaped and dilated, with its greater curvature in the pelvis, the tone is poor, and peristalsis inactive. The other abdominal organs tend to lie at a lower level, and the colon may not empty in 48 hours. He compared individuals who had no digestive symptoms with a number who had, and the results showed that approximately the same proportion fell into the

respective groups, indicating that the digestive trouble was in no way related to the position of the viscera. Later[89] he found that the bismuth meal reached the various points in the alimentary canal at approximately the same time, whether the viscera were placed high or low, and that there was no symptomatic difference between those who had no residue in their colons after 24 hours, and those with a residue after 72 hours.

In accordance with these findings by Mills, a stomach a few centimetres below the line joining the iliac crests might be abnormal in a hypersthenic individual, while a stomach with the greater curvature in the pelvis might be quite normal in an asthenic.

"Moody, Van Nuys and Chamberlain[90] examined 600 picked students without dyspeptic symptoms, and concluded from their findings that the greater curvature of the normal stomach might be found at any point between 7·3 centimetres above and 13·7 centimetres below the inter iliac-line. They also found that in the erect position, the stomach in women tends to be lower than in men, wheras, in the recumbent position it tends to occupy the same position as in men. The colon not only lay lower in women than in men but remained low in the recumbent posture".

Conran[30] comparing the X-ray findings of patients who complained of visceroptotic symptoms with those of apparently healthy individuals, came to the conclusion that a low placed stomach could exist without loss of tone, stasis, or any symptoms whatever. This appears to be a fact now

universally accepted by any approaching the question of visceroptosis.

Other anthropological investigators adopted different methods and terms of classification from those used by Mills, but arrived at, more or less, identical conclusions.

The Embryology of the alimentary canal appears to have a considerable bearing on the subject we are considering.

From the 4th to the 10th week of foetal life, the entire intestine, composed of the abdominal portion of the fore gut, the mid gut, and the hind gut, develops and passes out of the abdomen into the umbilical cord. Here it evolves into its various forms, and returning into the abdomen, is attached to the posterior abdominal wall by a single dorsal mesentery of which the superior mesenteric artery forms the axis. The colon is the last part to return, and the small intestine literally pushes the colon into position. Fusion of the mesentery with the peritoneum of the posterior abdominal wall, with disappearance of the peritoneum, is the process of attachment. The right colon, being the last segment to attach permanently, would be the segment most liable to congenital defects. In later stages, the caecum, originally a diverticulum on the posterior limb of the loop, swings round three quarters of a circle from the left of the mid line across the upper abdomen, crossing the pancreas and the duodenum, to the region of the right kidney in the right hypochondrium under the liver. Here it may remain, or it may cease to descend at any point between this and the right iliac fossa.

After reaching its final position the ascending colon and hepatic flexure are generally bound directly to the parietes by a layer of peritoneum, without the intervention of a meso-colon, which the caecum on the other hand invariably possesses. Sometimes there is no attempt at direct fixation of the ascending colon and then the whole of the proximal colon possesses a mesentery. The caecum, ascending colon and hepatic flexure may fail to attach themselves to the posterior abdominal wall. Herein may lie the origin of visceroptosis. Imperfect fixation of the proximal portion of the colon may affect the other viscera. The stomach, liver, and spleen feel the loss of the support of the shelf of the colon and its mesentery and so they sag and commence the process of ptosis.

A study of the abdominal cavity from the standpoint of comparative anatomy brings out the following points. We find that in man, the liver is fixed to the diaphragm, while in the quadruped it is suspended by a mesentery like the other organs. In man the duodenum is firmly fixed to the posterior abdominal wall, while in the quadruped it is freely movable. In man the ascending and descending colon and the two flexures are normally fixed to the posterior abdominal wall without the intervention of mesentery, while in the quadruped the large intestine has a long mesentery and is therefore freely movable. In man the great omentum grows down over the transverse colon and adheres to it, while in the quadruped this does not occur. In man the omental bursa is usually obliterated by adhesion of its layers together, while

obliteration does not take place in the quadruped. In man the pancreas has been rotated behind the peritoneum and fixed to the posterior abdominal wall, while in the quadruped it lies between the layers of the mesentery. Coffey[29] believes that the normal pre-natal fixations by adhesion or fusion in the erect animal are for the purpose of holding the organs in their places and to prevent them being piled up in the bottom of the abdominal cavity by gravity.

The absence of fixation of the colon may be associated with an error in the sympathetic nerve supply of the gut, and it would seem that there is but an imperfect segmental development of both Auerbach's and Meissner's plexuses. Bayliss has proved that this nerve error is responsible for intussusception, and this may have some significance, when one considers the nervous symptoms which are so evident in the clinical picture of visceroptosis.

Cameron[20] has shown that the abdominal viscera are fixed at the end of the third month of intra-uterine life, and that no further alterations occur except in the position of the stomach and caecum which remain mobile organs. This finding, however, is not accepted by all.[40]

In view of the importance which Lane attached to the sphincters of the alimentary canal, it would be well worth while to enumerate the sphincters that are supposed to exist. These sphincters are situated as follows:-

1. At the lower end of the oesophagus - no sphincter fibres can be demonstrated microsopically, but there is a hyper-

sensitiveness here and a tendency to contract, as may be found clinically in cases of cardio-spasm.

2. The Sphincter at the pylorus is very definite and is differentiated by the end of the 2nd month of foetal life.

3. Two in the Ileocoecal angle . The Ileocolic valve and the caeco-colic sphincteric area. The first is definitely associated with the pylorus. It is closed when the pylorus is open, and this association is one of the main-stays of the assumed condition of appendix dyspepsia. There is no true sphincteric muscle seen in the caeco-colic area in the human, but muscle is found in birds in this place, and the appearance of bismuth X-rays suggests its presence.

Comparing the stomach and the caecum one is impressed by the fact that the pylorus and the region of the caecocolic sphincter are the areas chiefly involved in pathological changes. Obstruction in the small intestine leads to distention of the duodenum and of the stomach, so analogously, obstruction of the large bowel leads to distention of the caecum.

4. At lower end of bowel - the external sphincter which is directly controlled from the cerebrum. The Internal sphincter above the levator ani, is under reflex control and spasm of this sphincter, is said to lead to dilation of the colon in the same way as pyloric spasm causes dilation of the stomach.

These anatomical notes have become augmented by various physiological and pathological comments, and physiological details of the action of the alimentary canal themselves have

been revised or altered during recent years. The stomach, which has the cardia and the pylorus as fixed points, varies in its position from time to time according to the position of the body, the amount of food or gas it contains, the excursions of the diaphragm and the state of emotional tone of the individual. Three types of movements are found in the stomach:-

a. A peristalic wave involving the body of the stomach and the pre-antral region and dividing it at the incisura angularis.

b. A contraction of the pyloric antrum as a whole, and

c. Occasional peristalic waves which pass over the antrum after the constriction at the incisura has taken place.

The stomach is very responsive to internal and external stimuli. The flow of gastric juice is excited or inhibited by many causes, some of them physical, others mental, and even the level of the gastric curvature may vary at the call of the emotions, so that the "sinking feeling" has a real physical basis, (Carson)[27].

The eminently satisfying acid control theory of the pylorus is now proved to be wrong according to MacLean.[78] The most important factor in determining when the pylorus will open appears to be the consistency of the food, and Haneborg has published evidence in support of the contention that the sphincter opens automatically; - some of the peristalic waves passing towards the pylorus act on the

sphincter and relax it.

Maclean[79] also states that there is ample evidence to prove that duodenal regurgitation, as a physiological process, is not a fact. The gastric acidity decreases towards the end of digestion irrespective of the presence or absence of bile in the stomach; independent of the regurgitation of alkaline intestinal contents: The facts being that the stomach secretes both hydrochloric acid and sodium chloride.

Clinical observers sometimes complain that the time taken for a bismuth meal to leave the stomach that is atonic and dilated may be several hours less than that for ordinary food. Groedel and Maase[51] by giving feeds of powdered bone, and comparing the X-ray pictures after bismuth meals have proved that bismuth has no effect in producing distortion of the stomach.

Alvarez[2, 3] has shown that in the intestines there are only two movements: -

a. Segmentation

b. Peristaltic rush,

and that these rhythmic contractions decrease in rate the greater the distance from the pylorus. The amplitude of the contractions increases as the rate diminishes. He considers that the evidence available is more in favour of a myogenic, than a neurogenic origin for the intestinal contractions.

Compared with the small intestinal the colon appears inert. Halliburton states that " Peristalsis in the colon occurs much more slowly than in the small intestines. A bismuth meal reaches the hepatic flexure of the colon about 2 hours after it appears in the caecum; another 2 hours brings it to the splenic flexure. The distance from the caecum to the splenic flexure is 2 feet: The contents take as long to travel this distance as the contents of the small intestine take to travel 22½ feet, that is, from the pylorus to the caecum. A further 2 hours is occupied in the journey along the descending colon, and six hours more brings it to the end of the pelvic colon which leads at an angle into the rectum. The total journey from the caecum to this point occupies thirteen and a half hours. During sleep the rate of progress may be slower.

Some observers have stated that retro-peristalsis occurs in the colon, especially in its ascending portion. Waves of this kind would certainly mix up the caecal contents very thoroughly. They have, however, been seen only in the exposed intestine of animals, and therefore may be artificially produced. A study of X-ray shadows does not reveal their existence in man. If retro-peristalsis does occur, regurgitation is effectually prevented into the small intestine partly by the ileo-caecal valve, and mainly by a strong band of circular muscle fibres called ileo-caecal sphincter: This is normally kept in a state of tonic contraction by impulses carried by the splanchnic nerve; it is relaxed

when this nerve is cut, and then the contents of the two intestines mix freely." -(T. R. Elliott).

Peristalsis in the intestines may be stimulated and inhibited in various ways: -

a. The usual stimulus is the presence of food in the intestine.

b. Impulses from the upper part of the alimentary canal as the taking of food. Placing of food in the stomach through a fistula had no effect showing that this movement is of psychical origin and is not a physiological reflex from distention of the stomach by food.

c. Sensations and emotions. Pain may inhibit as also anger. Excitement or apprehension may cause diarrhoea. Exercise which no doubt acts mechanically may increase peristalsis.

d. It may be influenced chemically.

The nervous mechanism of the gastro-intestinal tract is somewhat complicated. The present day view is that the cardiac portion of the stomach is supplied by the parasympathetic system which conveys both motor and inhibitory fibres. The sympathetic supplies the pyloric region, and from this point along the small intestine as far as the ileo-caecal region the sympathetic (motor) and the parasympathetic (inhibitory) come into play. A pure sympathetic supply is said to be present for the large intestine as far as the pelvic colon, supplying both motor and inhibitory impulses. The

rest of the large intestine and the rectum have a sympathetic (inhibitory) and a parasympathetic (motor) supply.

Various theories are held as to how these two systems operate and Bedingfield[7] sums up the evidence thus: - "The gastro-intestinal tract functioning by means of its own inherent mechanism, communicates with the central nervous system through the autonomic nervous system - The double innervation, by parasympathetic and sympathetic is, according to Arnau, Alverez, and others, a development for the better regulation of the gastro-intestinal tract as a whole. The central nervous system makes use of the vagus to produce localised effects, and of the sympathetic to produce widely diffuse ones. The network-like arrangements of the long non-medullated fibres of the latter allow a ready diffusion of impulses travelling either way."

Neurologists following Eppinger and Hess divided individuals into two classes according as their autonomic sensitiveness prevails over their sympathetic sensitiveness or vice versâ. The character of an individual may thus depend largely upon this reaction to cholin or adrenalin, or upon the relative abundance with which these are produced in his organism.[107]

The automomic or vago-tonic type of person is reserved and "cold-blooded" with slow pulse, contracted pupils, deepset eyes, cool pale skin which sweats easily, also clammy hands and feet. They may show other evidences of excessive vagal activity in the form of gastric hyperacidity, brady cardia, asthma, mild respiratory arrythmia and sluggish bowel action.

Vago-tonia may be a family stigma, generalised or localised to the cranial, the cervical or the sacral division of the autonomic system.

The clinical phenomena associated with the abdominal vegetative system are striking, as for example Gowers' "vaso-vagal" attacks. Excessive vago-tonus gives hyperacidity, pyloric spasm and excessive gastric contraction which produces peristaltic rumbling noises and possibly spastic constipation and muco-membranous colitis with its paroxysms of increased constipation and excessive secretion of intestinal mucus. The apparent contradiction in ascribing constipation and diarrhoea to the same cause is explicable by the fact that in one condition the circular muscles of the intestine are affected, producing constipation, while in the other the longitudinal fibres are affected permitting diarrhoea.

The sympathetico-tonic individual is lively and excitable with a rapid heart, bright eyes, dilated pupils showing frequently a tendency to neurasthenia.

Simpson[106] considers that the double innervation of the vegetative organs not under the control of the will is very important and that the mutually antagonistic arrangement maintains a balance which is protective. This physiological process is influenced by the endrocrine glands whose secretions exert a controlling effect on the mechanism of body metabolism. The thyroid, suprarenal and pituitary glands activate, while the thymus, pancreas and parathyroid glands inhibit it. This relationship to metabolism covers proteins, fats, carbohydrates and mineral substances. These secretions do not act absolutely

in a specific selective manner and there appears to be no hard and fast line of demarcation in the manifestations attributable to either the vago-tonic or the sympatheticotonic groups.

Giekie Cobb[45] assumes that the secretion of the adrenal glands keeps up cardio-vascular tone and neutralises poisons elaborated during muscular energy. Neurasthenic symptoms, loss of tone and other signs of hypo-adrenia he ascribes to the exhaustion of the adrenal glands caused by their excessive effort to combat the products of toxaemia. Cannon has shown that one of the results of fear is an incresed out-pouring of adrenalin into the general circulation. This substance is a stimulant of the sympathetic nervous system and hence has the power of inhibiting peristalsis of both the stomach and intestine. It also stimulates the pylorus to contract, thus closing the pyloric orifice. The inevitable result of this state of affairs is that the stomach is incompletely emptied between meals and the weight of its contents causes a pull on its points of attachment. Fermentation of the retained contents causes, distention, dilation and dragging on the colon and so on the right kidney. Thus Stoddart[108a] seeks to prove how the mental condition of anxiety may, by causing a condition of hyperadrenia, ultimately produce visceroptosis.

Hoskins[59] however, finds that adrenalin only increases the effect of the normal sympathetic impulses and that the sympathetic system can do by itself everything that can be accomplished by adrenalin.

Normal stomachs vary considerably in their tone and react to psychical and emotional stimuli. Hutchinson[67] writing on the treatment of functional dyspepsia mentions the Asthenic (or atonic) as one of the two main groups. He finds it chiefly in women, often associated with visceroptosis and often showing sub-acidity. Conran[31] however, found one-third of his series of dropped stomachs normal in tone. He found the acidity normal more often than under, and only a few cases where it was increased. Other observers find that the secretary curves in patients with gastric symptoms correspond closely with those of individuals who have no complaints of dyspepsia.

There is loss of tone in Acrocyanosis which occurs in one type of patient who is nervous and emotional and has a faulty stance and visceroptosis. In such patients there is a reduction in the calcium contents of the blood and according to Popescus'[98] work, calcium in small doses stimulates the sympathetic system.

Grove and Vines[52] maintain that the ionic calcium of the blood becomes deficient when a chronic toxaemia is present and they are satisfied that the exhibition of calcium and parathyroid which places the tissues of the patient under conditions more suitable for the performance of their normal functions and for combating the effects of toxic prosesses, restores the calcium contents to normal. This results in improvement of the patient's condition and often in complete abatement of symptoms and a return to normal health.

In this we may have the basis of a theory of toxaemia causing a deficiency in calcium, and so a loss of tone and an interference with the nervous system.

Henry[56] points out that, in connection with the study of basal metabolism, there are as yet no definite conclusions concerning the variations in the relative amount of energy consumed in the maintenance of autonomic functions and body heat in personality disorders. He feels justified, however, as a result of his studies in concluding that there is a definite relationship between basal metabolic processes and emotional states regardless of the type of personality disorder. Intense depression may retard the basal metabolism even in apprehensive tense and agitated states which otherwise would give an acclerated rate.

Toxaemia.

Throughout the literature on visceroptosis constant mention is made of stasis and toxaemia. Lane considered that the stasis produced the loss of tone and so the toxaemia, which was responsible for all the various symptoms from melancholia to flat feet. Conran[32] is of the opinion that the loss of tone precedes the stasis in the majority of cases.

The idea that constipation was at the root of most diseases seems to be deeply ingrained in the minds of physicians from earliest days. Still we find that auto-intoxication from constipation is given as the cause of many symptoms and diseases, loss of energy, headache, depression, insomnia, anorexia, loss of weight, bad taste in mouth, joint pains, chronic rheumatism, and also many forms of nervous and nerve diseases, diseases

of the blood and blood vessels, of the skin, of the lungs, liver, kidney and thyroid. Some writers mention constipation as a cause of cancer.

Metchnikoff's[82, 83, 84] work added a new impetus to this trend of thought at the commencement of this century, and his sour milk diet was popular for a long time in an attempt to counteract the intestinal toxines and the increasing senility which was attributed to them. In more recent years B. acido philus has been used with the same objects, but without any convincing success.

When true obstruction was present and the contents of the intestine were held up, symptoms of intoxication were manifested. This seemed to Wilkie[119] to be proved satisfactorily by his experiments, with closed duodenal loops in animals. Williams investigated the organisms present and considered them important, and Lockwood[77] using an anti-toxin prepared by Williams found that it gave good results in the treatment of obstruction associated with acute toxaemia.

There has been much discussion as to the nature of these toxines, as to whether they are bacterial in origin or protein bodies and much experimental work has been done in order to elucidate the problem.

Muir[94] writes "There is no doubt that in addition to the production of toxins by organisms which have invaded the tissue there may take place in pathological conditions of the alimentary tract, abnormal fermentative processes followed by the absorption of substances which act as poisons. To

this form of poisoning auto-intoxication has been applied, although it must be recognised that comparatively little of a definite nature is known with regard to it. Substances which act as poisons, or have harmful effects at least, may accumulate in the blood as a result of interference with normal processes of excretion."

No specific substances have been isolated which will give rise to the symptoms of intoxication in animals or in a normal person and some of the supporters of the toxaemia theory have admitted that the reaction of the individual towards the toxin is just as important as the action of the toxin on the individual.

Clinical experience soon shows the young doctor that drugs which are supposed to have a specific action seem to vary much in their effect according to the patient. Lane pointed out that dark skinned patients required a larger dose of a purgative than blondes. Food and diets which should be physiologically excellent often prove unsuitable and no explanation other than personal idiosyncrasy is available. This is eminently apparent in the case of infants. Frequently, a child, that theoretically, has been properly fed, will show signs of gastric or intestinal inability to deal with fats, carbohydrates, or proteins and no explanation such as vitamin deficiency is universally applicable. One is led to the conclusion that an individual peculiarity, diathesis allergy or some similar euphonious and mind-soothing condition must be present. Burnett[19] has shown that individuals may inherit an inability to assimilate a normally balanced diet.

The nervous child of Cameron[21] who suffers from digestive troubles, nervous irritability, loss of tone, constipation etc., he considers an heir to further trouble in adult life. Occasionally spontaneously, but more frequently on questioning visceroptotics, the assertion, "I have always had a weak stomach", or "I have always suffered from constipation" is forthcoming.

Hurst[62] says that the symptoms of toxaemia shown by patients who suffer from dyschezia or inefficient defaecation are more often due to the irritation of the colon caused by the aperients they have taken than to the actual constipation itself. This he distinguishes from colonic constipation in which he admits there is a likelihood of the delayed contents giving rise to toxic and other symptoms. He has known healthy individuals who were not well if their bowels were moved more frequently than once a week. From which it follows that what is constipation for one person is not for another. Lane's theories have impressed the lay public as well as the medical profession so that the subject of constipation has come to bulk largely in the minds of most.

Williams[122] says that constipation may be either occasional or habitual. The importance of the former depends merely on the fact that it may lead to the latter or to injudicious treatment. He emphasises the importance of diet, habit and the adequacy of the abdominal muscles in avoiding it and points out how the hypertrophic development of the control mechanism is the cause of all the trouble.

Hurst looking for an index of constipation considers that within 24 hours a barium meal should reach the rectum.

Constipation may be either atonic, or spastic in type. Ryle[105] has described the spastic variety which he attributes to: -

1. Local stimuli e.g. purgatives.
2. Central nervous stimuli e.g. worry.
3. External peripheral stimuli e.g. cold.

Korn[72] suggests that proctostasis may be due to psychic influences and instances two cases where this condition occurred in children as a result of fear of punishment.

Colitis is common in visceroptoties. The condition met with is not the ulcerative variety, as post mortem evidence of any pathological condition of the bowel is lacking. Any "inflammation" present is of a catarrhal character.

Abrahams[1] gives as causes for the hypersecretion of mucus present, mechanical causes of irritation which alter the lumen of the bowel, such as ptoses, kinks, strictures, adhesions and pressure by external tumours. Irritants such as scybala, purgatives or unsuitable douches: intestinal parasites subacute infections of the alimentary canal, sepsis from teeth, nasal sinuses or pelvic viscera. Uric acid and other irritants which are excreted through the intestinal membrane.

In addition there remains as a distinct group, cases of primary colitis to which a variety of names has been given, mucous colitis, muco-membranous colitis, mucous disease,

intestinal neurosis, mucous colic, mucous croup, colitis, pseudo-membranacea, membranous enteritis, myxoneurosis coli, myxorrhoea nervosa, tubular diarrhoea, muco-membranous colopathy. These names indicate an attempt to emphasise some aetiological belief or to emphasise some distinctive feature. There is much disagreement as to the cause. Some maintaining that this condition is due to physical disability, whilst others contend that it is the nervous system which is at fault in responding with unreasonable vigour to a trivial stimulus. Mucin is poured out into the bowel in excess and is coagulated by mucinase so that it is finally passed as a jelly or membrane. Hurst pointed out the similarity between it and asthma and suggested that the colon was affected by similar nervous influences which in other cases caused asthma. May not the excessive production of mucus lead to a depletion of the calcium reserves and form a stronger link in the toxaemia - calcium - deficiency - nervous - system - upset - hypothesis?

Constitutional Factors.

Langdon Brown[18] considers that there are some inborn errors of metabolism which fulfill Jonathan Hutchinson's definition of diathesis as being any condition of prolonged peculiarity of health giving proclivity to definite forms of disease. "Each step in metabolism requires its special ferment and it is the absence of some special ferment that may induce a predisposition to a disease. The 5% of the population who are congenital achlorhydrics he regarded as

having an inborn predisposition to certain grave diseases. With these he puts endocrine balance and the posture of the viscera." Von Pirquet describes all forms of altered reactivity of the organism as allergy. This term is usually used to mean an inborn sensitiveness while "anaphylaxis," is an aquired sentiveness. Hypersensitiveness is a refusal on the part of the individual's protoplasm to attempt to deal with certain foods and drugs in order to conserve its own identity. There is an inability of the cells to assimilate certain substances. From the make-up of their protoplasm some individuals are quite unable to do this and are therefore liable to suffer if they are exposed to material which is for them highly toxic. Habit or environment may activate some latent inborn tendency and disease result. These predispositions to disease can be shown in many instances to be inherited according to Mendelian laws. Recent attempts have been made to explain mucous colitis in terms of allergy similar to those with regard to asthma.

Mental.

The mental condition of visceroptotics has drawn the attention of the alienist and psychologist to this state.

The alienist looked for some toxin in the alimentary tract which might be responsible for the mental condition. The psychologist for some mental condition which might explain the physical.

Pathological anxiety occurs in many conditions and is

often associated with obsessional symptoms or hysteria writes Culpin[38]. Headache, insomnia, heart trouble, dysmenorrhoea, asthma, dyspepsias and mucous colitis, are found in anxiety states. The influence of emotion upon bodily functions accounts for the association and when attention is directed to the mental state these physical manifestations can often be notably influenced.

In 1922, Stoddart[109] wrote that moderate dilatation of the stomach and the resulting visceroptosis is curable by relieving the patient's mental condition, either by improving the circumstances of life or by psycho-analysis.

Henry[56] investigated the gasto-intestinal tract in mental patients and came to the conclusion that certain definite physiological changes in the viscera accompany and are closely associated with different types of mental reaction.

It is apparent that there is a present tendency to study more the "sick man" than "the sickness" which is a change from the dogmatic materialism of the past. Much might be gained in our knowledge of disease if we would recognise that there is not necessarily an opposition between the materialistic and the psychiatric schools or lines of thought.

Aetiology.

A complete medical history seems to be of paramount importance in elucidating any aetiological factor in cases of viseroptosis, and in this connection the family physician

has opportunities not always available to the specialist. I must confess to having been influenced by the example of Mackenzie who has shown us how difficult it is to understand the mechanism and estimate the prognostic significance of early symptoms; how easy it is to lose our sense of proportion and to put our faith in mechanical contrivances; and how illuminating an intelligent investigation of the patient may be. Doubtless many others, like myself have been impressed by Mackenzie's honest character, efficiency and determination, pains-taking noting and reviewing of signs and symptoms, but have fallen short of the example he set. Interested in the subject of visceroptosis for many years, I find that the available notes on cases are very imperfect and do not lend themselves to an analysis that is likely to lend much support to any findings that might be adduced from them. I therefore propose to use summaries made by more consistant observers and to amplify them when possible with notes of my own cases.

Incidence.

Glénard found the general incidence 11% Einhorn 39% Conran 22%. These figures taken together should give a fairly accurate index to the incidence, for it must be remembered that Glénard made his observations before the days of X-rays, that Einhorn's patients were mainly suffering from gasto-intestinal troubles and that Conran[33] got his results in an examination of consecutive patients with a variety of complaints and that the condition he was studying

was mainly a gastroptosis.

Sex Incidence.

It is more common in women than in men.

Age Incidence.

The condition appears to be most common in the fourth decade of life but Bortz[12], who was looking for the condition, found most of his cases between the ages of twenty and thirty. With the advance of years the symptoms seem to lessen in intensity and it is rare for people in the seventh or eigth decades to complain of such symptoms though they may have been "martyrs to indigestion" always.[102]

Conran found that childbearing had little effect on the incident though this is given as one of the chief causes of the text book acquired variety of the condition. Presumably he was dealing with patients of a class where medical attention at confinements would be the rule.

Heredity.

It is difficult to estimate what part, if any, heredity plays in this condition as the diagnosis of visceroptosis is not one that is made known usually to the patient, and the children are not likely to know if their parents had suffered from dropped stomachs etc. The hereditary history, however, is sometimes available and there is a hereditary history of dyspepsia in about one-third of Conran's cases and a history of neurosis and tuberculosis in about one tenth. The patient Mrs. E. G. subsequently mentioned in this paper had a neurotic mother and father, one sister who died of cancer and another who suffered from visceroptosis and

neurasthenia. Another patient A. E., a chronic visceroptotic, had one asthmatic son who apparently committed suicide and a second who had an attach of paralytic ileus, treated by operation.

Build.

The general concensus of opinion still seems to be that visceroptosis, as a clinical entity, is more common in the patient with poor physical developement and narrow build, though it is seen in those who are well developed muscularly. In patients who are fat and apparently well nourished the fat is often of the flabby variety, though their history may show that previously they had been thin.

Mode of Life.

The condition is not confined to those who lead a sedentary or unhealthy life and may be found in those who have had a strenuous and athletic existance.

Causes offered in explanation by the patient.

Some patients can give no reason for their condition. Some have been ailing all their lives as far as they can remember, and have got progressively worse. Others date the onset of their symptoms from some acute illness, some specific fever, appendicitis, some long physical or mental strain, or a nervous break-down. Indigestion is the most common complaint initiating the train of symptoms from which the patient ultimately suffers.

Symptoms.

In few conditions can there be a greater variety of symptoms than is found in visceroptosis. In fact the variability of the symptoms is one of the outstanding features of this condition. These may be exemplified by reference to two cases:-

G. S., male aet. 47 complained of loss of appetite which had increased in degree over several years. He was thin, chest scaphoid in type, sallow of complexion, and gave no history of serious illness or of gastric symptoms. He admitted previous sexual excess, and family and business worries. He wished to regain his former appetite for food but was not unduly worried by his condition. He was given various tonics and diets without appreciable results. An X-ray disclosed a decided gastroptosis, and he was fitted with an abdominal belt, and induced to carry out various exercises, but when seen two years later he still had no desire for or appreciation of food and seemed prepared to accept the fact philosophically.

Mrs. E. G. aet. 57 exemplifies the opposite extreme. Her father was healthy except for gout, and was autocratic, morose and taciturn. Her mother was capable, but of a neurotic temperament. She was a weakly but high-spirited child, and suffered for a long time from a "weak back", and attacks of bronchitis. She married at the age of 19 and entered on a life of stress and worry. She had to work when she felt unable. In rapid succession, she had five children

and two abortions, with several attacks of menorrhagia and a breast abscess. She had frequent headaches and almost constant backache. A prolapsed uterus was replaced and a pessary worn for several years without relief, and she underwent the extreme treatment of cautery with a Corrigan's button. She had occasional attacks of constipation, and various symptoms of alimentary trouble. The angles of her mouth cracked; she had stomatitis, gaseous eructations, flatulence, regurgitations, nausea, flatus, borborigmi, anorexia abdominal pains varying from dull dragging pains to severe colic. She developed haemorrhoids pruritus and an anal fissure, for which she underwent operation with temporary relief. She had attacks of palpitation vertigo and pseudo--angina. Her extremities went cold and dead, and she developed asthma, which haunted her for many years but which now attacks her only occasionally. She wore an abdominal belt for some time without much improvement; she developed mucous colitis, and her abdominal pains became so severe that an exploratory operation was performed, and a redundant colon stitched up into place. She survived a severe broncho-pneumonia and an abscess of the parotid gland and can now be classed as a chronic invalid. At present she still has attacks of intense fatigue, headache and backache. She does not sleep well and is often troubled with dreams. Her cervical glands are enlarged and from time to time become larger and tender. She has definite arthritis in the inter-pharyngeal joints and elsewhere, and has attacks of brachial neuritis

and sciatica. Her main complaint is abdominal. Before and after a movement of the bowels she experiences intense pain in the region of the rectum, which spreads across the buttocks and radiates up the spine and into the abdomen and which may shoot down the legs. This increases in severity till she borders on dementia unless it is relieved by morphia or heroin. She is slight in build but fairly well nourished. The abdominal fat and muscles are flabby. Her disposition varies from cheerfulness to utter melancholia. Mentally, when not in severe pain, her condition is very alert. Her memory is good but at times confused. She is religious minded and still has faith that she may be cured. She is emotional and erratic in thought. Though interested in others and in things outside herself, her aches and pains keep her thoughts self-centred. She has a tendency to worry over trifles and is haunted by doubts and fears and a feeling of neglect. At times her condition is so poor that her doctor almost agrees with her that her condition is hopeless.

Moore and Wheatly[91] write "There is hardly any subjective symptom or objective sign suggesting abdominal pathology which may not be found in a study of these conditions", which at first sight would suggest that a study of the symptoms would be a difficult task. These symptoms, however, may be divided into:-

a. Abdominal.

b. Toxic.

c. Nervous.

a. Abdominal.

The most common symptom under this heading is constipation, which may be occasional or habitual. It may alternate with diarrhoea, and in many cases mucous colitis is present. Occasionally diarrhoea or a loose movement of the bowels twice or thrice a day exists by itself. Abdominal discomfort, flatulence, heartburn, acid eructations, dry or sour taste in mouth, nausea, bilious turns, vomiting with temporary jaundice, empty sinking feeling in the epigastrium, loss of appetite, hunger and thirst, splashing in the stomach, may point to that organ as the cause of the trouble. The discomfort may go as far as actual pain which may come on immediately after food. Pain may obtrude itself only some time after a meal and may either be increased or relieved by taking more food. Pain may be located in the region of the right iliac fossa and may be of a constant dragging nature with acute exacerbations. It may or may not be relieved temporary by a movement of the bowels. Pain may be referred to the left iliac fossa and there may be pain and tenesmus on evacuating the bowel. Some find the pain bearable if the bowels do not act and in them defaecation initiates pain in the rectum which radiates up the spine and over the whole abdomen. The abdominal pain may have intervals of remission but it seems to be constant in type and location for each individual, though erratic in its time of appearance and duration.

b. Toxic.

Toxic symptoms may be made to include fatigue, drowsiness after food, headaches, joint and muscle pains, neuritis, and loss of

weight. Fatigue or general weakness is very common and tends to increase. It can be put aside at times, which suggests to some a mental origin for it. If the patient wishes to do something sufficiently intensely he may make an effort and accomplish it, but he has generally to pay for the effort by an increased feeling of fatigue. The majority of these patients suffer from rheumatism in some form or another; though I have not found it complained of in all. They may have had an acute rheumatic attack or they may have recurring attacks of a sub-acute variety. The occipital muscles or aponeurosis is one of the most frequent sites but the pectoral intercostal and lumbar muscles are frequently affected. One patient had an attack of erythema nodosum. The rheumatism seems to vary very definitely with atmospheric changes. Goldthwait[47] reports that in no case of atrophic joint trouble seen by him, has X-ray examination failed to show ptosis and resulting disturbance.

Enlargement and tenderness of the cervical glands may occur from time to time with an accompanying pyrexia. Occasionally a patient may have the temperature raised for some days without any definite cause and complain of a "chill" and an increase in the general feeling of malaise and the general aches and pains. Not infrequently there is a complaint of chronic nasal catarrh which may be microbic in origin. Associated with it may be a tendency to attacks of bronchitis. Neuritis may occur in the brachial nerves or in the sciatic nerve, and neuralgia may be accompanied by

a pain behind the eyes which may be very intense. Paronychia of the finger or toe nails occurrs which is very persistent. Pain in the back is a very common complaint and it appears to me that it may be due to a fibrositis, a looseness of the sacro iliac joints, a spasm of the renal arteries, or a definite neurosis.

c. Nervous.

Vaso-motor symptoms are common especially in those who have been invalids for some time. These are exemplified by attacks of palpitation and tachycardia. Coldness of the extremities with numbness and the synocpal stage of Raynaud's disease. These patients are most susceptible to cold and cannot stand excessive heat well. A draught of cold air may induce an attack of sneezing, an attack of rhinorrhoea or initiate muscle pains. One of my patients has oedema of the ankles, hands and infra-orbital tissues which waxes and wanes in an unintelligible fashion. Frequency of micturition, especially nocturnal, is a very common finding without any evidence of kidney disease. Dysmenorrhoea menstrual irregularities and leucorrhoea are present in a large proportion of cases. Attacks of asthma are found. This in one patient appeared to be sympathetic, in the lay meaning of the word. Her husband had been a sufferer from asthma for many years and she at last developed the same complaint. Another asthmatic suffered for about 10 years from repeated attacks which gradually decreased in severity but with this decrease her abdominal symptoms increased. Migraine may occur, and

attacks of vertigo.

Depression is common in this type of patient. It may be overpowering and almost constant or it may lessen as the day advances. Insomnia is a frequent complaint and bad dreams and phobias occur. The mental attitude may be one of deep melancholy and querulous introspection or the patient may be ficticiously cheerful. There may be irritability which the patient knows should not be present and resents. There is often hypersensitiveness to imagined insults. The sympathy of the patient may be easily aroused but there is a lack of concentration and, in time, a general inability to accomplish anything. Sometimes there is loss of memory but as a rule these patients, particularly for their own symptoms, have extraordinarily good memories. They may be able to describe their symptoms with a minuteness of detail which is remarkable, and they can repeat verbatim what their doctor or doctors have said years ago. Their memories may be remarkable for other things besides their symptoms and many of them are above the average in intelligence.

Associated Signs.

Loss of weight is a common finding and sometimes improvement in the condition follows an increase in weight according to the ideas of Weir Mitchell.

Radiographic examination results are not constant. The extremely ptosed stomach is usually hypotonic but may occasionally be hypertonic. Intermittent pylorospasm and

consequent delay may be present, the duodenal cap may be contracted. There may be ileal stasis and the appendix may show abnormalities. Usually there is coloptosis and colon delay.

The acid curve of the stomach may be normal, but it is often decreased and occasionally increased.

The complexion is very often sallow and muddy, the tongue may be furred, or red and dry. Pyorrhoea may be present and stomatitis and cracking of the lip margins. The abdomen may be flat, and the muscles poorly developed. The abdominal aorta may be easily palpable, and the kidneys, especially the right, easily felt. The liver is sometimes well below the costal margin. Splashing may be elicited in the stomach and the colon palpated. The abdomen, on the other hand may be distended both in the upper and lower portions, and there may be a surprising amount of adipose tissue present in its walls. Tenderness on pressure may be present in the epigastrium, in the gall bladder area, and the right iliac fossa and at the hepatic and splenic flexures. Occasionally there is tenderness in the left iliac region. The thyroid may show an increase in size. The skin may sometimes be pigmented and flat foot, and thickening of the finger joints be present. The Blood pressure and pulse pressure is usually low. There is often an anaemia of a secondary type and a tendency to leucopenia..

Present Day Theories.

While Lane's theories, and the immense amount of work

he has done in connection with this subject, still have their influence, it is almost universally recognised that his theories are no longer tenable. Curiously enough, concepts formed long before the days of X-rays, are brought forward still as an explanation for this condition. For instance, Hurry and Fenwick[61], regard viscerptosis as a "vicious circle" disease belonging to a group which also includes pulmonary tuberculosis cardiac failure, obesity, neurasthenia and chronic constipation inter alios. They set out to show how the vicious circle everywhere dominates the disorder, there being, in each case, stasis of air, food, bile, urine or faeces. They state that the Ars Medica can do much to cure the disease, incurable by nature, if it can succeed in breaking the vicious circle.

Goldthwait, and other orthopaedic surgeons in America attribute the visceroptosis to incorrect posture, especially in the narrow backed type of person, who is indentified with the "morbus asthenicus" type of Stiller. They are followed in this country by Cochrane[28] who explains this purely mechanical theory as follows: -

"By congenital visceroptosis is meant a ptosis of all the abdominal viscera which is general and marked, and which is accompanied by a characteristic alteration in the posture of the body as a whole. 'Incorrect posture', by which is meant the use of the body in a drooped relaxed attitude, acts fundamentally by invalidating the normal supports of the viscera with consequent interefence with, what may be termed, the

"mechanics of physiology".

The factors concerned in the support of the viscera are four in number: -

1. The sub-diaphragmatic space must be generous.
2. The inclined plane from the fourth lumbar vertebra must be present.
3. The lower abdominal wall which receives the downward thrust of the viscera must be of satisfactory strength.
4. The head must be held erect with the chin in, and the chest elevated so that the deep cervical fascia may take the strain of the fibrous pericardium, which is continuous with the suspensory ligament of the diaphragm, to which the stomach and liver and indirectly the other abdominal viscera are attached.

"A broad anatomic and mechanistic conception is the basis for the proper understanding of the conditions as regards treatment along physical lines. For whether the element of poor posture is to be regarded as the cause or the effect of a combination of other factors concerned in a functional breakdown in health or not, it forms part of a vicious circle, the correction of which is essential if the patient is ever to merit being described as really well. By appreciating also the fact that posture bears a definite relationship to muscle-tone, it is possible to demonstrate clinically, that if habits of proper posture are maintained over a short time, the increase of reflex postural tonus directly attributable to such posture will serve to maintain the erect

attitude without conscious effort thereafter.

Moore and Wheatley[60] explain the condition as being due to faulty posture combined with a lessened degree of adaptability which may be due to faulty metabolism. They maintain that the demands of civilisation, the lives we lead, and the clothes we wear, do not permit an adjustment of the organism to the new conditions. They sound a warning against the production of a type, which will have to substitute props and stays for nature-given supports, as a price for existence.

In a study of girls receiving intensive physical training, they found that posture and diaphragmatic excursion could be improved, but that in two years, not much improvement could be made in a young girl who was originally much below the average. Girls of good posture were found, as a rule, to be without visceroptosis. When a student's condition relapsed the regression was usually due to worry or fatigue.

Coffey[29] adds an embryological cause to Goldthwait's mechanical theory. He believes, as we have seen, that the pre-natal fixations, by adhesion and fusion in the erect animal, are, without doubt, for the purpose of holding the organs in their places and to prevent them falling to the bottom of the abdominal cavity. There is deficiency in fusion in varying degrees:- general, right sided or in the mid line, which allows of sagging and kinking producing a stasis and a resultant loss of fat. He considers that the flexures are the last parts to give. He gives a melancholy picture of the final stages of the condition: "The organs settle

towards the bottom of the abdomen, the upper abdomen shrinks in size to fit the organs contained in it. The chest follows and becomes elongated, the lower ribs become slanting and close together, while the lower abdomen becomes greatly expanded. Thus Nature, handicapped by congenital defects, gives up one stronghold after another, the last being the splenic flexure, and retreats before her enemy, gravity, burning all her bridges behind her for the purpose of maintaining the one feature essential to life, viz. an unobstructed alimentary canal".

Waugh[116] is another supporter of the mechanical theory. He thinks that an ascending colon which preserves its primitive mesentery is not a mechanism so mechanically efficient for its task as one that has become securely fixed. It may function satisfactorily provided the neuro-muscular mechanism is sufficiently active, but if not, the abnormal mobility produces inefficiency of function. The bowel then becomes overloaded and drags on varying organs, producing varying symptoms. For him, constipation is - "The final refusal of the ascending colon to perform its natural function under mechanical conditions badly suited to it".

He is followed by Carslaw[22] who accepts the undue mobility of the colon as the chief aetiological cause, analogous to the patent processus funicularis (or processus vaginalis testis) which is a potential disability. Added to this is an acquired, sometimes a congenital faulty body formation.

Meyers[85] in Australia follows Coffey and Waugh.

O'Day[95] calls the condition 'Palingenesis', and he

emphasises the embryological factor, which, he thinks, in the asthenic individual gives rise to visceroptosis in a mechanical way. He points out how the ptosis may cause an interference with the function of the lacteals and a viscerocyanosis which may have a conjectural effect on the function of the liver.

Conran [34] believes that the condition is a manifestation of a general condition which he calls 'Hypotonic diathesis', and which he defines as a "particular condition or habit of body predisposing to a loss of tone in the musculature of the alimentary canal and commonly associated with a low position of the viscera." He is of the opinion that the loss of tone comes first and causes stasis.

Walton [114] suggest an inherited mental and physical diathesis in addition to membrane formation, and increased mobility as the cause.

Saner [103] ascribes it to a depreciation of postural tone and a certain central deficiency.

Tyrrell - Gray [111, 112a, 112.] combines a functional with the mechanical theory. The ptosis and undue mobility are not pathological, but, when a lax abdominal wall, or an inefficient perineum allow of a drag upon the mesentery symptoms supervene. The co-ordination between the sympathetic, para-sympathetic nerves and the blood supply of the intestine is upset with resulting inhibition of intestinal movement and paralysis of the intestinal muscle.

A psychic factor may be present, and excessive mental activity, anxiety, fear, unhappiness may from prolonged stimulation of the sympathetic inhibit both the secretory and motor functions of the gastro-intestinal tract.

Aynesworth[5] appears to follow Waugh and Tyrrell - Gray. He found that in a series of 300 male and female, black and white patients, all those who complained of indigestion had a mobile caecum.

The condition of chronic duodenal ileus from compression of the third part of the duodenum by the root of the mesentery, is by Wilkie[120] and numerous other surgeons, thought to be a clinical and pathological entity. He holds that visceroptosis and congenital lack of fixation of the proximal colon predispose to its development. He has found the condition in cases where from lack of tone in the abdominal wall the intestines hang over the pelvic brim and produce a drag on the mesentery, as well as in the cases where the colon is mobile. He also found pressure exerted by the right colic artery.

Appelmans and Goidsenhoven and Boine[4] define four groups of chronic duodenal stenosis which they state occurs relatively, frequently. The symptoms of digestive and general disturbance they ascribe to the intoxication caused by the duodenal stenosis.

Miller and Gage[87] describe cases of gastromegaly as they call it, in children, due to compression of the duodenum. They differentiate this condition from other forms of duodenal stenosis, such as, congenital atresia or cicatrization of a peptic ulcer in the newborn child, which are comparitively rare.

The theories of present day physicians appear to be fewer than those of the various surgeons, and tend to depend upon theories held by old-time investigators. For example Hutchison[68] considers that Stiller's explanation of a "Morbus asthenicus" is the best. He thinks that the ptosis of the organs and the presence of bands producing kinks may aggravate the nervous condition, which may co-exist, by interfering with nutrition. "Unhappy" living may be as important as "unhealthy" living in connection with the mental state of the visceroptotic.

Bramwell[16] says that while visceroptosis may cause symptoms, it is often symptomless, and warns against influencing the patient to attribute his discomforts erroneously to a physical cause we are unable to rectify. He considers that the symptoms of visceroptosis are very largely of mental origin.

Mallory[80] considers that the symptoms can be explained by a disturbance of the abdominal circulation. The erect posture induces an engorgement of the abdominal viscera with blood, which increases the drag on the mesentery. This upsets the vasomotor control, further producing interference with the balanced control of the intestines.

Conybeare[37] thinks that the position of the viscera depends largely on the habitus and that they are retained in their normal positions by the abdominal muscles which maintain a positive intra-abdominal pressure rather than by the support of the various mesenteries and peritoneal ligaments.

Hurst[63-65] asserts that intestinal stasis does not lead to duodenal kinking or dilatation, and stresses the effect of the emotional factor, as influencing the secretions and movements of the alimentary canal. He considers visceroptosis mainly functional.

Bortz[13] draws attention to the fundamental importance of the mesenteries and to the tonis of the voluntary and involuntary musculature of the abdomen.

The most recent and comprehensive contribution to the subject comes from Bedingfield[8]. He criticises the mechanical theories and points out that no toxin has been isolated that will produce in an ordinary individual the effects ascribed to it. His conclusions I will quote almost verbatim. "There is a normal variation in position and mobility of the viscera within the abdomen which may be brought about by physiological or psychical factors. There is no necessary relationship between the body build and the position of the viscera apart from what is mechanically necessary. The position of the visera,per se,does not give rise to symptoms - except when associated with a true abnormality, such as an aberrant renal artery. While one or several of the symptoms discussed may appear temporarily in a normal individual their persistance occurs only in those of a special constitution which is associated with a state of nutrition and state of mind. The state of nutrition shows itself in the tall, thin individual by underweight, and in the short broad individual by overweight, leading in both by means of the poor muscle

tone to postural defects. The state of mind reveals itself in abnormal mental reactions. The association of malnutrition, poor muscle tone and abnormal mental reaction, which is characteristic for the group appears to depend on a congenital, possibly inherited inability on the part of the individual to adapt himself satisfactorily to the stresses and strains of life. One of the failures of adaptation may be lack of resistance to degrees of infection and toxaemia, which have no effect on normal individuals. When sensations from malfunctioning viscera rise into consciousness in an individual who is the subject of repressions based upon an inferiority complex, these tend to be utilised in the form of symptoms, to reinforce the repression. The malfunction may originate peripherally, from local causes, such as improper feeding etc., or centrally from weakening of inhibition produced by fresh mental conflicts. Later, with the establishment of a vicious circle of malfunction - symptoms - malfunction, actual tissue changes may occur in the affected organs, rendering them incapable of a return to normal function. When this occurs there is little chance of restoring the individual to his or her particular standard of health."

Diagnosis.

Bortz[14] writes that ptosis of one or more of the abdominal viscera is easy to diagnose. For him the outstanding event in the history appears to be the failure of all therapeutic measures previously tried, and the number of times the patient has been pronounced "nervous".

This may be helpful in the case of the patient who comes to one after having had many doctors and forms of treatment. The difficulty in diagnosis occurs frequently when one is introduced to a patient who has never had much serious illness, and who is suffering from some acute or seemingly acute abdominal crisis. One can remember cases where symptoms suggested the early stages of acute perforated gastric ulcer, duodenal ulcer, cholecystitis, acute appendicitis, acute obstruction and a variety of surgical emergencies. The differential diagnosis is discussed adequately in various text books. We are all conscious, however, of cases in which we have submitted a patient to an unnecessary operation, as well as of cases in which we have adopted expectant treatment e.g. as in the case of a pelvic appendicitis, until surgical interference has been unduly, or too long, delayed.

In all cases the most important point in coming to a correct diagnosis is the history of the patient. This must include the history of illness and symptoms from earliest days, and is often very difficult to obtain as the urgency of the symptoms present make the patient and the relations impatient of delay, and insistent on "something being done". The knowledge that the family physician has of the patient's previous medical history, and of his mental and emotional make up, give him a decided advantage over the casual doctor. Should a consultation with a surgeon be suggested the family doctor may be able to help considerably.

He can advise a consultation with a surgeon who

will consider the case on its own merits, and, at the same time, take into consideration the doctor's knowledge of the family constitution before deciding to operate.

Next in importance comes a careful physical examination of the patient. Visceroptosis, like any other conditions, especially in its early stages, may escape notice if not definitely sought out, and an opportunity may be missed of falling into line with the modern trend, which emphasises the importance of prevention in treatment. Many lesser medical abnormalities, which do not appear to be of great importance in themselves, may help the persistent observer, for such patients have a habit of emphasizing some symptoms, and treating others, which may be more important from a diagnostic point of view, with light-hearted casualness.

Laboratory and X-ray examinations may be of great assistance, but mainly in excluding the presence of organic disease, a fear which is frequently present in the patient's mind and in that of the doctor. In the latter instance, it is often impossible, even with every facility for examination available, to be certain that no organic trouble exists. This doubt, as Bedingfield points out, may serve the purpose of making the physician consistantly vigilant, but it must on no account be communicated to the patient.

The advantagesof team work are not demonstrated in the diagnosis of this condition, whatever may be their benefits in other "diseases." Too many forms of examination, which may suggest, of themselves, a means of cure, may act adversely on

the patient's mentality, and negative findings may aggravate a despondency which already exists. Apart from the exclusion of organic disease, team-work may be of advantage in emphasising to the patient the interest taken in their case.

Treatment.

We may assume that "the ends or purpose of medicine are to alleviate pain, prolong life, restore and promote health in the individual and the community".

In the treatment of visceroptosis all are agreed that priority must be given to preventive and medical measures. Any treatment to be effective must be prolonged and tedious, and must demand effort and concentration, qualities which are conspicuously lacking in this type of patient; so the onus comes to rest upon the physician, who must be prepared to be definite in his instructions, ready with fresh forms of treatment when the patient becomes wearied with the previous ones, persistent in his insistence on continuity of treatment, and optimistic, sympathetic, and above all patient in his outlook.

Preventive Treatment.

This must be commenced early, and the physician who has discovered signs and symptoms in a child or youth must endeavour to prevent these gaining a hold on the patient and producing further derangement of health. It is no good saying that the child will grow out of various disabilities

when advice regarding treatment may prevent that child from becoming one of the few who do not escape their inherent disabilities but become chronic invalids.

Conran[35] suggests:-

1. Exercises and drill, during childhood and adolescence, followed by regular exercises in later life. Moore and Wheatly[92] emphasise the importance of clothing, correct standing and sitting, and correct gymnastics, and the avoidance of physical strains.
2. An adequate diet with a sufficiency of fruit and green vegetables and fluids. This is a large subject in itself and various diets are given by various observers, but the main point to be noted, is, that the diet must suit the individual needs of the patient. Alcohol and tobacco are forbidden.
3. Inculcation from the first of regular habits. This may be extended conveniently beyond the vegetative habits to include the mental.
4. Prompt treatment of any irregularity of bowel action and of dyspeptic symptoms.

Curative Treatment.

This, to some extent, depends upon what is considered the chief aetiological factor. Generally it includes as a preliminary step the eradication of all foci of infection that may be present.

1. Elimination through the bowels, kidneys, skin and lungs. Constipation may be attacked, if present, by means of a suitable régime of:-

   a. Diet

   b. Massage.

   c. Electrical Treatment.

   Colonic lavage may be necessary and some physicians consider it a most important adjunct to other forms of treatment. Liquid paraffin, mentioned here because of its non-chemical properties, since its introduction, in 1899, by Neville Wood to the medical profession, has received almost universal acceptance as an aid. Latterly doubts have been expressed, and some members of the profession believe that it is responsible for loss of weight and even for cancer.

2. Rest to combat malnutrition.

3. The malposition of the organs may be rectified by keeping the patient recumbent with the foot of the bed raised. After about two months of of this régime the patient is allowed more freedom and is gradually induced to get back to a normal mode of life.

Surgical belts, of the Curtis or other varieties may be of use, but care must be taken to see that the condition of the organs is not made worse by their use, as has been pointed out by Carslaw[23]. These belts are not so necessary in younger patients whose muscles can be brought back into a

better condition by means of suitable exercises, but in older patients they may be most comforting, and may help to support a laxness in the sacro-iliac joints, which is often the cause of the otherwise persistent sore back.

Drugs play a minor role in the treatment of this condition Atropine or Belladonna may help to relax an irritable pylorus. Alkalies allay a sensitive gastric mucosa . Landis and Gittings[75] mention the treatment of a case of sympatheticotonia in a child by means of physostigmine and pilocarpin which might be useful if there is anything in the theory that in visceroptosis there is this lack of balance in the autonomic system. Salicylate of soda is often useful, but in some cases is very depressing. Cacodylate of soda, given hypodermically, is advised by Phillips[96] among others, but I think that hypodermic medication should be restricted as much as possible. I agree with him, however, that Stychnine is often of use though Bedingfield is not in favour of this "tonic". Iron is indicated for the accompanying anaemia but as a rule is not tolerated easily by these patients. I have found Ultra Violet Radiation of assistance in treating this condition, although it is not the panacea some would have us believe. It must be administered carefully and it frequently improves nutrition and helps to restore a feeling of "well-being". Liquorice, Senna, cascara and phenolphthalein are sometimes indicated, and, I have found Salol of use, though Williams[123] does not recommend it, preferring Thymol. Bromide, Chloral and phenolbarbitol are necessary to quieten the nerves and

reinculcate the habit of sleep. Valerian is of undoubted use in what the patient calls "nerve storms". Malt and cod liver oil often help in upbuilding and these patients as a rule are tolerant of fats, which may be administered in other forms. Morphia, I think, may be used at times to allay pain, but the ease with which a visceroptotic becomes an addict must be borne in mind.

Stoddart[110] in 1922 pointed out how frequently visceroptosis was associated with the anxiety states. It was found also in patients who live in a constant state of fear for some conscious reason. He stated that moderate dilatation of the stomach and the resulting visceroptosis are curable by relieving the patient's mental condition, either by improving the circumstances of life which gave rise to it, if that can be done, or by psycho-analysis.

Bramwell[17] says that isolation is often helpful in the treatment of these patients and a trial of the Weir Mitchell régime may give satisfactory results.

Bedingfield[9] gives a very helpful description of how treatment of the constitutional, social, and psychological factors, may be accomplished.

Surgical intervention, Bedingfield[9] considers "useless as a method of treatment, and criminal, as a method of diagnosis". Hurst[66] is evidently of the same opinion. All physicians and most surgeons agree that operations are to be avoided if possible, and that they are only an adjunct to the other forms of treatment already mentioned.

Stiles[108] confesses that he would prefer not to operate upon a visceroptotic. Hutchison[69] admits that if symptoms persist after treatment on the usual lines "it may be necessary to resort to exploration".

Operations for complicating conditions are not contra-indicated. These include the removal of adenoids, and septic tonsils; conservative nasal operations for any condition of sepsis there present; and the removal of haemorrhoids and the cure of fissures. Haemorrhoids, fissures and pruritus are frequently associated with nervous symptoms. Whether or not haemorrhoids are caused by constipation or are a factor in producing this condition, they certainly may be the cause of much inconvenience and distress. The intimate connection between the anal sphincter and the cerebrum can be demonstrated in lightly anaesthetised patients. Any stretching of this sphincter causes alteration in the respiration of the patient. The association between the evident abnormal innervation of the sphincters in visceroptotics is suggestive, and the symptom of pain associated with dilatation of the bowel muscle may have some bearing on the fact that menstrual pain is frequently a complaint made by these patients.

Many and varied are the operations that have been devised to alleviate and cure this condition and the following are still employed: - Gray and Anderson[50] consider that all, that is necessary surgically, is to divide the membranes and bands. Rowsing stitched the serous coat of the stomach

to the anterior abdominal wall. Coffey passes sutures through the parietal peritonium, the gastro-colic omentum and the great omentum and forms a hammock in which to support the stomach and the colon. Waugh and others fix the mobile colon in various ways, and Wilkie finds that this procedure is sometimes sufficient in dealing with chronic duodenal ileus, though gastro-jejunostomy is sometimes necessary. Gastro-enterostomy for a large dilated slowly emptying stomach is still sometimes performed, as also ileo-colostomy and colectomy as practised by Lane, but Hurst finds that these operations are frequently ineffective in overcoming even the constipation for which they were devised.

There is general unanimity of opinion in considering that surgery is the correct treatment in twisting of the pedicle of the spleen and in cases of Dietl's Crises. Kidney operations in this condition, I thought had been abandoned, but Jurasz[71] concludes that, in certain cases, nephropexy is justifiable, and that it is the only treatment that can give lasting results. He is against the use of any belt or bandage. Billington[11] also still performs the operation of nephropexy. Hammond[54] considers that no permament improvement follows operation when there are symptoms of neurasthenia associated with a movable kidney. When they co-exist they depend on the same causes, he states.

I have not mentioned prolapse of the uterus or of the pelvic contents due to laxness or trauma of the perineal floor, as these conditions are dealt with in text books on Gynecology. They may occur in connection with

visceroptosis but, as we have seen, child-bearing does not appear to have the expected effect in producing a general visceroptosis that formerly it was supposed to have. It is not considered necessary to use a pessary in every case of a prolapsed uterus, and one has found that to do so may have disastrous results by focussing the patient's mind on her condition.

Result of Treatment.

It is difficult to gauge the results of treatment in this disorder as they depend to some extent on the physician or surgeon as well as on the patient. Some patients fail to persevere with the treatment and drift. Some may have had adequate treatment at an early stage of the trouble and all writers are agreed that the earlier this condition is recognised and treated the better are the results found. The patient, however, who has had various forms of treatment without good results, tends to lapse into a state of hopeless invalidism.

Some investigators such as Conran, state what is in their opinion the best form of treatment, and give no indication of the results they have obtained. The practice of following up cases has enabled others to give the results obtained. The fact that most observers note that temporary alleviation of symptoms may follow operations on visceroptotics must be borne in mind.

Lane's enthusiasm for his operative methods of treatment has not spread as might have been expected, and many surgeons have expressed their prejudice to methods which they term

too drastic. Waugh[117] gives a record of 180 operations in which the results were satisfactory. Carslaw[24] gives the results of 242 cases treated by Colopexy. His results are a little difficult to tabulate as he divides them up according to the conditions found and treated. He had failures, and naïvely admits that some patients had to undergo a second operation. Of the 239 patients he was able to trace, 212 were satisfied with the result of the operation. Of these he considered 168 completely cured. Wilkie suggested that as in his opinion, the operation in cases of general visceroptosis is absolutely unsound in theory and never successful in practice, the successes reported by some surgeons may be due to the fact that they operate only on those cases in which prolapse is limited to the ascending colon. Carslaw answers this criticism by stating that he had 62 cases of general visceroptosis in his series and of these 35 were cured, and 16 very much improved. Wilkie[121] reports that in the last few years the occasional colectomies he had performed for redundant colon associated with stasis, had been the most successful operations he had undertaken.

Meyers[86] believes that "if care is taken in the selection of cases operative treatment is very satisfactory and much invalidism and even death may be prevented".

Quain who considers that the mobile colon is more responsible for the symptoms than the "chronic appendix", followed up 96 cases, of an average age of 25 years, after a period of from 1 to 7 years, and found that 84 of the 96

had been entirely relieved of their symptoms, and that constipation had been cured in two thirds of the number.

Bortz[15] who adopted non-operative measures in 100 patients from 10 to 60 years of age found that 82 were improved definitely.

Bedingfield gives the results as he found them in 142 cases with a very comprehensive summary of their physical, mental and social history. His treatment consisted mainly of rest, exercise, diet, and psychological adjustment. 41 of his patients had had previous treatment, surgical and other, without obtaining relief. In none of these did he obtain a cure i.e. "a restoration to full economic efficiency", 7 were improved as long as they kept to prescribed treatment. 14 were relieved, i.e. comfortable but liable to relapses; and 20 all of whom had had some form of surgical interference were unrelieved.

Of the other group of 111 cases, 60 were cured, 28 improved, 13 relieved and 10 who were incapable of co-operating, not relieved.

Discussion.

Visceroptosis in itself is not a disease. This is stated definitely by all writers on the subject, and is borne out by any survey of X-ray findings, physical examinations or postmortem reports. There is a group of individuals who have their abdominal organs placed in a much lower position than in the average person, whose muscles are weak and poor in tone, whose emotions are

unstable, and who suffer from symptoms referable to a derangement of their nervous, alimentary and vasomotor systems. This is the condition known as visceroptosis.

Kinnier Wilson[74] speaking of the nervous system says: - "The day has passed for the physician to transform clinical syndromes and pathological complexes into diseases. For what is a disease? Obviously, it is neither the etiological excitant, nor the clinical allure, nor any underlying pathological change; and we may with Sir Humphrey Rolleston, allege that it is nothing else than a mental picture - a conception figured in the mind, a composite of elements no one of which by itself suffices to define. At any rate, we shall find great, nay, insuperable, difficulty in establishing disease entities unless we can prove that a given causative agent produces invariably and solely the same reaction in the body, exhibiting the same syndromes, and amenable to the same treatment." The same may be said about the condition which we call visceroptosis, and with his assertions we must agree. They have some relation to our subject, however. The days of niceties regarding diagnoses have passed, at least for a time, except in so far as the diagnosis affects treatment. Members of the profession have a mental picture of the syndrome we call visceroptosis, but it is not the same mental picture for all. For some the abnormal position of the viscera may colour the picture, for some the various systems affected, and for others the distorted personality of the patient may fill the canvas. It will require a master

hand to lymn in each component part in its right proportions and produce a representation of the condition correct from all points of view.

As a profession our education in student days in anatomy, physiology and pathology tended to make us look for, or at least expect, a cause for an effect and the result of this is evinced in the satisfaction expressed on the face of the surgeon who removes a palpably inflamed appendix from a patient in whom he has diagnosed the condition aright. This undoubtedly influences those who stress the congenital mobility, the low position of viscera, the presence of bands, the loss of tone, the intestinal stasis, in explaining a cause for this condition. Time and work tend to divorce us all from the comparatively elementary knowledge of anatomy, physiology and pathology which we acquired as students, and we are unable to keep in close touch with advances that have been made in these subjects. We rely to a great extent on those who write on, or specially deal with, such conditions, and they, too, frequently base their theories, like some text books, on those of previous workers, in spite of the fact that extended clinical and experimental work has proved these theories to be inadequate. Our teachers may have emphasised the importance of the personality equation in an investigation of any syndrome, and Bedingfield will have accomplished much if his book helps us to note any peculiarity of the state of nutrition and the state of the mind in its childhood's manifestations and to follow it up through succeeding years.

In this connection the findings of Rabiner and Keschner may be apposite. They suggest that some organic nervous diseases may occur in two phases: an early psychical one where complaints and symptoms can be classed only as non-organic or functional, and a later, organic phase, where structural changes show themselves, that will satisfy the most orthodox pathologist. They suggest that psychical factors may, through the sympathetic nervous system affect lipoid metabolism, and so induce structural changes in the central nervous system.

I would submit that the different points of approach are responsible for the variety of present day theories regarding visceroptosis. These range from the purely mechanical, to the purely functional, with intermediate synthetic theories. Whatever bias a surgeon or physician may have from special interest in one or other system or function of the patient tends to make him try and explain symptoms and cure conditions by reference to his subject of special interest.

Heredity seems to have some bearing on the aetiology of visceroptosis. The history of dyspepsia and nervous instability fall into line with the generally accepted belief in the chromosomic origin of organic and mental traits. Whether or not body build has any bearing on the condition seems still doubtful. Bedingfield finds that it has none. In the cases I have collected, the incidence is only 8 per cent more frequent in the asthenic than in the hypersthenic. Conran finds that there is a condition or habit of body

predisposing to loss of tone and commonly associated with visceroptosis, and a recent writer says that "it is generally accepted that a so-called visceroptotic habitus exists". From the findings Bedingfield quotes and gives in support of his contention it would appear that this belief can no longer be "generally accepted".

The text books and various writers mention congenital and acquired types. This presumably, is an arrangment based on an attempt at gauging the severity of the immediate cause of the symptoms. Phillips[97] mentions that: -

1. Conditions such as adenoids which interefere with the proper development of the chest.
2. Malnutrition and rickets in children which interefere with muscular development.
3. Relaxation of the abdominal and perineal muscles from repeated pregnancies and
4. The ancient 'cause', pressure on the lower part of the chest or upper abdomen from tight belts or corsets may give rise to the acquired type.

Whether or not viscera were low in position, before these factors came into play and produced symptoms, can be ascertained only by means of consecutive examinations by X-rays and the minutest medical history. Perhaps America will lead the way in such an exhaustive attempt to clear up this etiological point. The fact that Bedingfield finds that

about 40 of his patients had been either the last of large families, the only survivors of weakly families, or the only chidlren of ailing parents, might be adduced in favour of the view that there might be expected to exist some depreciation of stock, or some congenital weakness either of body, or mind in these cases. General observations would suggest that the unwanted child has often peculiarities either mental or physical, and I have one patient who ascribes her frailty to this factor, with what correctness I cannot say. Whether the supposed peculiarity is due to an inherited nervous instability, or is due to an attenuated spermatozoon has not, as far as I know, been proved.

The work of Waugh and Carslaw[25] and others in connection with mobility of the Caecum and ascending colon cannot be discountenanced entirely, I think, though Bedingfield says that it has been "not proven". In spite of some doubt as to the correctness of Keith's theory of peristalsis in the large bowel it seems reasonable to suppose that undue mobility of an organ of congenital origin might, in conjunction with other considerations, place it at a disadvantage in the performance of its normal functions. The vexed subject of chronic appendicitis is not yet cleared up. Carslaw[25] denies that such a condition exists but he recognises colic due to a "choked appendix" as a clinical entity. Quain[100] does not go so far but shows that in his cases a lack of appreciation of the mobility of the colon and of the rectifying of this condition, is responsible for the failures

in cases where "chronic appendicitis" is treated by mere removal of the appendix. Carson[27] says that there is general agreement that an abnormal appendix can give rise to dyspeptic symptoms and considers that one of the commonest errors is to confuse appendicitis and visceroptosis. Concoran[36] states that the non-recognition and correction of visceroptosis is a great factor in bringing to naught various forms of treatment - of symptoms in the lower abdomen. It is not my place to criticise surgical technique, but I have often been impressed by failure to make use of an opportunity of thoroughly exploring the abdominal contents on the part of surgeons who remove the appendix through a grid-iron or other circumscribed opening.

The part played by the mobile colon is definite, I think, in the condition of duodenal ileus.

A constitutional weakness has been mentioned as being present in cases of visceroptosis. This may be seen in the physical nervous and mental make up. These patients are either excessively thin, or overburdened with unhealthy fat. They have unstable nervous systems and are apt to be labelled "functional" cases. They are emotionally unstable and tend to be depressed.

A suggestion has been made lately that tuberculosis and rheumatism are nervous diseases. Visceroptotics are subject to rheumatic and neuritic pains and manifestations, and there are points of similarity between tubercular and the visceroptotic patient. In both, there is present the

fatigue and exhaustion. Both may be manifest in either too thin or too fat subjects, but phthis or general tuberculosis will often produce a mental attitude which is optimistic, while visceroptosis invariably gives rise to one of pessimism.

Clifford Allbutt wrote in 1884 that "neuroses above the belt are more clearly understood than those below". The stimulus given by the work of Freud and others has led to more investigation of the personality of the patient, and to the ways in which he reacts to the various problems of life and existence. Good[48] points out that by this new source of medical knowledge elements could be disclosed and brought back into consciousness and energy, hitherto dammed back could be released to bring about improvement or cure.

The relationship between neurasthenia and visceroptosis has been variously explained. Carslaw[26] states that he thinks that the mental changes are secondary to the visceroptosis.

Watt[115] thinks that visceroptosis which is accompanied by a degree of anaemia of the brain and a degree of toxaemia from the intestinal tract is the cause not the result of "anxiety" states. He points out that the really healthy person takes no (anxious) thought for the morrow, given the necessities of life.

Graves[49] considers that often an acute infection may be followed by a chronic infective process which implies a general biochemical disorder such as calcium deficiency.

This infection may spread through the system and if it finds another area of weakened resistance a further reinforcement of the infective process results. The longer the cycle goes on the greater the reduction of general health until a definite mental disorder is produced.

Bedingfield is of the opinion that one of the associations of the special constitutional weakness in visceroptotics, is the abnormal mental reactions to which they are subject. He traces the growth of this lack of adaptiveness from childhood, through puberty, and the storms of married life, showing how it may account for symptoms and actual tissue changes which may make the condition ultimately incurable. Others hold that neurasthenia is never the result of visceroptosis.

The practical aim of medicine, to restore health, may be an excuse for surgeons performing various operations on a visceroptotic patient. One cannot blame a surgeon for removing a dilated, inert, unhealthy looking colon which is, in his opinion, contributing to the condition of chronic ill-health from which the patient is suffering. There is, I believe, a place for surgery in the treatment of this condition. The explanation of the great divergence of opinion between surgeons and physicians is to be found in the difference in their outlook. The surgeon is mainly interested in the possibility of the relief of pain or ill-health by surgery; the physician is mainly concerned in discovering the disorder of function which is responsible for the symptoms.

Both agree that in treatment the patient should be helped to meet all the strains and the problems to which he may be subjected. In this connection psychotherapy may be most helpful, but I have been impressed by the fineness of the process on which this depends. This is illustrated by the following case: -

Mrs. J. H., aet. 38 complained of pain in the back, frequency of micturition, especially nocturnal, indigestion, and nervousness of some eighteen months duration.

History.

a. Family. Her mother and maternal aunts suffer from diabetes.

b. Personal. She is happily married, childless, and has had no miscarriage. She has been brought up in comfortable circumstances, but has a sufficiency of work. Is a total abstainer, and moderate tea-drinker. She was brought up by her aunts, one of whom frightened her, while a child, with a knife.

Past Illnesses. Rheumatism, 'nervous back' since age of 19, pruritus, piles, bilious attacks.

Present State. Above the average in intelligence; animated and cheerful in disposition; well nourished and developed; stance good, complexion clear.

Alimentary System. Appetite fair, teeth false, tongue furred

bad taste in mouth, much flatulence, pain in epigastrium and lower abdomen coming on from half to two hours after food, and passing off usually before the next meal. Pain sometimes troublesome at night: alternating diarrhoea and constipation: Abdomen full. Tenderness in epigastrium. Some splashing in stomach, and gurgling in right iliac region, no increased resistance. Stomach on percussion shows greater curvature well below the umbilicus. X-ray showed general visceroptosis, liver not palpable, lower margin at level of right costal margin gall-bladder and spleen not palpable; right kidney easily felt.

Circulatory System. Dyspnoea on exertion; sometimes faintness and palpitation; heart sounds normal; pulse regular in character but sometimes increased in rate.

Respiratory System Nil abnormal.

Genito-urinary System. Micturiction frequent; urine acid, no albumen, no sugar, a trace of mucus; menstruation regular, lasting two or three days, scanty, not much pain, but symptoms worse before periods.

Nervous System. Slight tremor of hands. Sometimes vertigo; no sensory disturbance; deep reflexes increased; no clonus.

Cerebral. Memory good, attention sustained, speech fluent, thinks "in capital letters", sleeplessness sometimes present . Is concerned regarding her condition. Has periods of anxiety and is easily "upset". A fright gave her the sensation that the contents of her abdomen had dropped. She has morbid thoughts: fears knives, solitude, heights, and open spaces.

Treatment. With rest, graduated exercises, diet and medicinal treatment her physical condition improved. She appeared to derive benifit from sun-bathing but had remissions in her mental state.

Considering that her mental state was due perhaps, to some repressed emotion of early life I sent her to be psyco-analised. Before this treatment was finished, the psychoanalist went on holiday, and promised to send her his address in case she might wish to communicate with him. One day she came to me in an agitated condition, as she had not heard from him. She feared that he had forgotten his promise, and she was in danger of losing the confidence in him that she had acquired. I assured her that her confidence was not misplaced, and fortunately the address arrived in the course of a few days.

This shows the egotistical attitude of the patient. She considered her condition and treatment of paramount importance and could not allow for any forgetfulness on the part of her doctor that absence on holiday might have excused. It

also shows that a small happening such as the non-arrival of the address might have meant failure of the complete psychological treatment.

Draper[39] gives a word of warning in his "Disease and the Man", when he points out that over emphasis of the psychological aspect of a physical disease is just as dangerous as its exclusion.

Draper and Johnson[41] consider that the surgeon is better fitted to deal with certain forms of chronic disability of intestinal origin than the psychologist. They admit that post-operative improvement in subjective symptoms is an index of doubtful value, but they find that in cases of enteric dysmorphism where the personality of the child or young adult had deteriorated, and, where the environment was not at fault, they obtained improvement therein from partial to complete restoration of personality by surgical intervention.

The psychologist cannot influence the long-established, chronic case of visceroptosis, nor can he do much more than the family physician in dealing with conscious causes of an anxiety state. Comparing statistics given numerically by Waugh, Carslaw, Quain, Bortz and Bedingfield, one is impressed by the percentage of successes claimed by the surgeons as compared with those of the physicians. Some scathing remarks by Carson on the surgical treatment of this condition, produce a reply from a follower of Waugh and Carslaw, who finds that his results justify him continuing

to operate for visceroptosis. While my results, though not so conclusive as Bedingfield's, do not support the contention of these surgeons, one must conclude that surgical intervention cannot be entirely ruled out in the treatment of this condition.

The personal attitude of the doctor towards his patient is at no time of greater importance than in these cases, and a steady optimism and reasoned sympathy will go a great way in helping the patient to meet the difficulties he encounters, and to make life more endurable for the patient who has lapsed into the chronic state.

FINAL VIEWS.

The work of Pavlov[124] and his pupils on the higher reflexes in animals shows promise of shedding a flood of light on the more intimate nature of visceroptosis, only the outer aspects of which can be revealed by ordinary clinical, physical and radiological methods. His mode of investigation is quite objective and purely physiological, and depends neither on the subjective methods of the psychologist nor on the findings of purely anatomical methods. He has shown that the complexity of the actions of the cerebrum is more apparent than real. Its functions are truly reflex but are subject to inhibition which may result either from extraneous circumstances or internal (cerebral) causes, and it is this intrusion of inhibition which makes the working of the cerebrum appear to be so arbitrary.

Pavlov distinguishes unconditioned reflexes, which are inborn, and are present in all representatives of the same species, from those which he calls conditioned reflexes, and which are the property of each individual central nervous system, and are largely a matter of experience and learning. These reflexes of the latter type are acquired individually and may be of a very simple nature, or they may form groups, and so present compound reflexes which may be very complex in character. He has worked out the effects of external and internal inhibition, and has shown how the central nervous system can not only develop new sets of reflexes, but also can discriminate very closely related stimuli, differentiating these into effective and ineffective.

The following conclusions from his work on unconditioned reflexes might perhaps be applied to the condition of visceroptosis:-

a. He found that in animals suffering from digestive troubles, distemper, inanition etc., a temporary disappearance, or temporary weakening of all the inhibitory activities, and even of the conditioned reflexes themselves took place.

b. When an animal is taught to make consecutive and more difficult discriminations, the former reflexes and inhibitions, which had become established, are affected, and the finer the new inhibitory activity is, the greater will be its disturbing effect on previously established reflexes, till a state is produced in which all the conditioned reflexes and inhibitions become upset. The animal

becomes excited. Its general behaviour changes, and "it has all the appearances of a neurotic patient".

a. Long continued illness or mental strain might interfere with the normal function of the central nervous system in a patient, and produce a disappearance of inhibitory activity and of conditioned reflexes. So normal stimuli might act abnormally.

b. It has been shown by means of X-rays that some sudden start may cause a stomach to lose tone and drop into the pelvis, The same condition may be caused by emotional stimuli. Bedingfield[10a] quotes Barclay's case where a high transverse stomach suddenly lost its tone when the subject was startled by a door slamming; Horder's, when a similar effect was produced by a screen striking the patient's chin; and Langdon Brown's case of the nervous man called up for military service who showed atonic dilatation of the stomach till he had obtained exemption, when the stomach was found to have regained both its tone and position. Repetition and reinforcement from other reflexes, and weakening of inhibitions, might cause the "sinking feeling" to intrude itself abnormally into the consciousness of the patient. The function of discrimination is upset, and he lapses into a condition of neurasthenia.

It must be remembered that the alimentary canal has a very rich nervous supply, the bulk of which is represented by the sympathetic system, the only direct nervous connection with the central nervous system itself being from the

medulla through the nucleus of the vagus nerve. There is arising, however, a good deal of evidence from several different points of view to show that the vegetative activities of the body have a representation in the central nervous system in the regions surrounding the third ventricle. As an example, one may quote, a. diabetes insipidus, b. the recent findings of Harvey Cushing that after operation on this region several of his patients have developed a gastric ulcer, and, c. Kinnier Wilson's description of periventricular epilepsy. If impulses to and from the abdominal viscera thus have an open pathway to the neuraxis, the further question arises as to what happens to afferent impulses from this region on arrival at their termini in the brain, in conditions of health and ill-health. The working of the lower parts of the central nervous system is known to be based on reflex action. Pavlov's work has shown that this is also true of the neopallium, with the addition that each individual acquires during life a number of conditioned reflexes, arising from innumerable causes, which are based fundamentally on the reflex actions of the lower part of the nervous system. There seems to be no reason for supposing that the normal reflex activities of the vegetative side of life may not also be subject to such superstructural reflexes, and if this is so, it may well mean that for further knowledge of visceroptosis, with its manifold symptomatology, we will

have to look for advances in our knowledge of the integrative activity of the cortex so far as reflexes of the sympathetic type are concerned in health, and for knowledge of disintegration of such reflexes in certain conditions of ill-health of which visceroptosis shows promise of proving a striking example.

Conclusions.

1. The main conclusion forced upon one is the unsatisfactory quality of our knowledge of visceroptosis.
2. Widely diverse opinion regarding the cause and treatment of visceroptosis still exists.
3. This appears to be due to:-
   a. The influence of early teaching.
   b. The point of approach of investigators of the condition.
4. The condition seems to be more psychical than physical.
5. It may be due to some inborn tendency influenced by fortuitious circumstances.
6. Treatment is mainly preventive, and must be early and continuous.
7. Surgical treatment is of use in selected cases.
8. Psychological treatment has its place in correcting failures of adjustment and repressed emotions.

9. Further knowledge may be gained of visceroptosis when conditioned and other reflexes are better understood. This better understanding may be gained by continuing the investigations begun by Pavlov.

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